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ON THE BRITISH LESTREMIINAE, WITH NOTES ON EXOTIC SPECIES.—2. (DIPTERA, CECIDOMYIIDAE).

By F. W. Edwards, F.R.E.S.

Lestremia Mcq.

The characters common to both subgenera which are not also shared by *Anarete* are as follows :—

Eye-bridges three or four facets broad. Antennae of ♂ long, 16-segmented, all flagellar segments except the last with long necks, the swollen portion bearing three hair-whorls, hairs in the basal whorl short, those in the other two long and spreading. Antennae of ♀ 11-segmented, flagellar segments with short necks or none, and only one distinct hair-whorl, placed near the base. Fourth tarsal segment as long as fifth. Empodium in both sexes shorter than claws; claws in both sexes more or less obviously denticulate beneath. Wings with rather long macrotrichia spread more or less densely over most of the surface and along all the veins (except *R*1). Immediately beyond the end of the costa (where *R*5 unites with it) is a narrow interruption of the thickening of the wing-margin. *Rs* short but nearly always distinct, horizontal or not very oblique.

In all the British species the palpi are much longer than they are in *Anarete*, the segments successively increasing in length, the fourth much the longest (fig. 1, g).

Subgenus **Lestremia** Macq., s.str.

Antennae without definite sensoria in either sex, last segment in ♀ constricted near tip, the nipple-like terminal portion bearing a hair-whorl (fig. 1, j). Male styles ending in one or two sharp points, tegmen elongate-conical (fig. 1, l–p). Wings (fig. 1, a–c): Vein *Cu*1 nearly reaching base of wing; branches of median fork practically parallel, lower branch thinner than upper but equally distinct throughout.

I have seen typical examples of this genus from North and South America, West and East Africa, Papua and New Zealand; some specimens are very similar indeed to the European *L. cinerea*, and I should not be surprised if this species proves to be cosmopolitan when better material is available for comparison. Malloch's *Zygoneura fenestrata* belongs here.

L. (L.) cinerea (Macq.) Edw.

C. carnea Lw. ?, *L. declinata* Kieff. ?, *L. sylvestris* Felt ?.

Thorax with slight but obvious greyish dusting. Wings (fig. 1, a) with anal area bluntly right-angled or only slightly obtuse. Branches of median fork almost equally divergent from stem at base, slightly approximated beyond middle. Hypopygium (fig. 1, l–n). Style ending in two teeth, the one on the outer margin smaller than the other; ninth tergite of moderate size; roots of coxites bent inwards and pointed, the points facing one another but not touching.

This is the commonest species; wing-length averaging about 2–3 mm. Loew's description of *Cecidogona carnea* seems to apply sufficiently well to this species; he described the ocelli as absent, but this was doubtless an error as they are present (though small) in all species of *Lestremia* known to me.

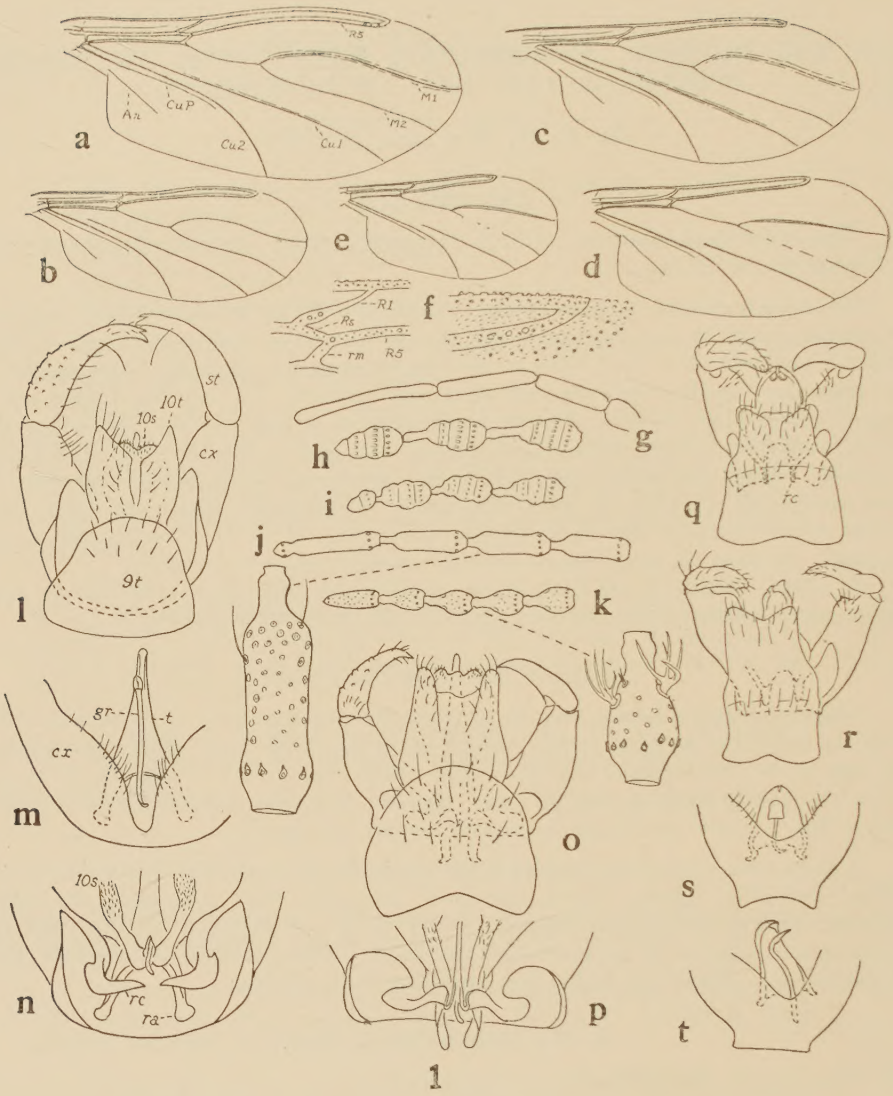

FIG. 1.—British *Lestremia*.—a–e. Outlines of wings (hairs omitted), to same scale; a, *cinerea*; b, *fusca*; c, *leucophaea*; d, *defecta*; e, *strobli*. f, enlarged portions of certain veins showing positions of pores. g. Palp, *cinerea*. h, i. Tip of ♂ antenna: h, *defecta*; i, *strobli*. j, k. Tip of ♀ antenna, with one segment enlarged to show sense-bristles: j, *cinerea*; k, *defecta*. l–t. Male hypopygia: *cinerea* from above (l), beneath (m) and from above with tergite and anal segment removed (n); *leucophaea* from above (o) and with tergite and anal segment removed (p); *defecta* from above (q) and beneath (s); *strobli* from above (r) and beneath (t).

L. (L.) fusca (Mg.) Winn., Edw.

The species which I have determined as *L. fusca* is very similar indeed to *cinerea*; I can find no clear distinction in antennae or genitalia, and it may be nothing more than a smaller, darker form of *cinerea*, the most obvious difference being that the anal area of the wing (fig. 1, b) in *fusca* is more obtuse; wing-length about 2 mm. It is frequently found on windows.

L. (L.) leucophaea (Mg.) Winn., Edw.

This species is amply distinct from *L. cinerea*, differing as follows :—

Antennae with necks of flagellar segments longer. Thorax lighter in colour, mesonotum somewhat shining, without a trace of grey dusting. Wings (fig. 1, c) with lower branch of median fork almost continuing direction of stem, upper branch arched at base, then nearly parallel to lower branch. Hypopygium (fig. 10, p). Style ending in one tooth; ninth tergite much larger than in *cinerea*; roots of coxites turned inwards as in that species, but quite differently shaped.

Not uncommon about old beech trees.

Subgenus **Anaretella** End.

(*Neptunimyia* Felt).

Antennae of ♀ (fig. 1, k) with paired subapical sensoria on each flagellar segment except the last two, each with 4–7 irregular branches; similar sensoria, but with rather fewer branches, present on first 4–5 flagellar segments of ♂; last antennal segment of ♀ entire, not constricted near tip. Male styles without terminal teeth, tegmen broad. Wings (fig. 1, d, e): Vein *Cu*1 hardly extending back beyond bend of *Cu*2; branches of median fork evenly divergent almost from base, lower branch faint or obsolete in middle.

This subgenus is also widely distributed. I have seen specimens of species obviously referable to it (though quite distinct from the European species) from Brazil, South Africa and Samoa. The North American *N. tridens* Felt (of which *L. pini* Felt is possibly the male sex) is evidently very similar to *L. defecta*. The African *L.* (*A.*) *africana* End., material of which is in the British Museum from the Gold Coast, has much more in common with the subgenus *Lestremia*, especially in venation and antennae; it does, however, agree with *L. defecta* in having the roots of the male coxites directed backwards instead of inwards and to this extent is intermediate between the two subgenera.

L. (A.) defecta Winn.

(*N. bromleyi* Barnes).

Thorax blackish or dark brownish, more or less pruinose. Antennae of ♂ (fig. 1, h) with necks of the flagellar segments fully two-thirds as long as the swollen portion, terminal segment almost as large as penultimate. Venation and hypopygium as shown in figures (fig. 1, q, r). Wing-length about 2·5 mm.

Common. A male in Winnertz's collection in Bonn agrees with British specimens as regards venation, hypopygium and other features; my conclusions as to the inaccuracy of Winnertz's figure of the wing and the synonymy of *bromleyi* with *defecta* are thus confirmed.

L. (A.) strobli sp. n.

Differs from *L. defecta* as follows :—

Antennae of ♂ (fig. 1, i) with all necks of flagellar segments shorter, only about half as long as the swollen portion; penultimate segment with very short neck; terminal

segment small; verticil hairs less numerous. Hypopygium (fig. 1, r, t). Coxite with subapical enlargement on inner side; style not so broad and more pointed; tegmen narrower and differently shaped at tip; tip of genital rod differently shaped. Wing-length barely 1·5 mm.

Type male taken near Crickhowell, Brecon, ix.1936. I at first thought the specimen might be merely an abnormal *defecta*, but later saw two more male specimens from Strobl's collection, taken at Admont and determined as *defecta*. The Austrian males agree with the Welsh one except that the terminal antennal segment is not so small.

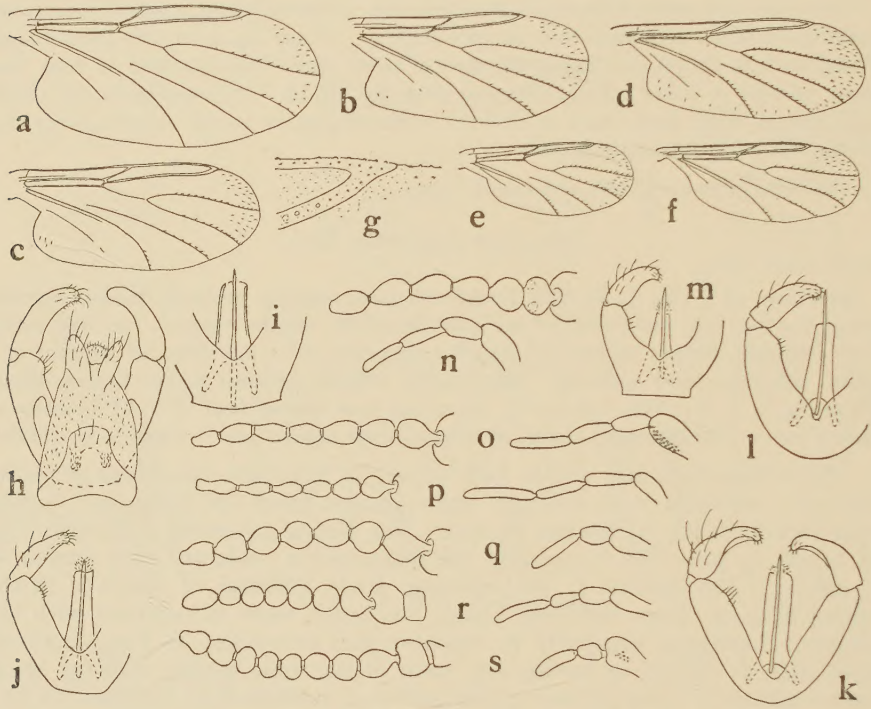

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FIG. 2.—British *Anarete*.—a–f. Outlines of wings (distribution of macrotrichia on membrane and posterior veins shown); to same scale as fig. 1 (a–e): a, *candidata*; b, *lacteipennis*; c, *heracleana*; d, *coracina*; e, *angusta*; f, *triarthra*. g. Tip of costa enlarged, *candidata*. h, i. Male hypopygium from above and beneath, *candidata*. j–m. Male hypopygia from beneath: j, *lacteipennis*; k, *heracleana*; l, *coracina*; m, *angustata*. n–s. Antenna and palp: n, *candidata* ♂; o, *lacteipennis* ♂; p, *heracleana* ♂; q, *coracina* ♂; r, *angustata* ♂; s, *triarthra* ♀.

Anarete Hal.

The main characters differentiating this genus from *Lestremia* are as follows:—

Eye-bridges narrower, only one or two facets wide, usually narrowed to a point at ocelli. Antennae of ♂ shorter than thorax, with only 8–9 segments, second segment somewhat enlarged, flagellar segments small, without necks and with short verticils only. Antennae of ♀ not quite so short as in ♂, usually 10-segmented, second segment scarcely enlarged, sensory hairs simple. Palpi shorter than in *Lestremia*. Hypopygium (fig. 2,

j–m). Tip of genital rod pointed, unmodified. Empodium in ♂ (except in *A. angustata*) very large, much longer than claws, in ♀ much smaller; claws in ♂ simple or with fine hair-like serrations on distal half, in ♀ quite simple. Wings with short and often very inconspicuous macrotrichia on membrane at tip, with sometimes a few along hind margin; posterior veins at least partly bare. Costa ending less abruptly than in *Lestremia* (fig. 2, g). No trace of a break in the thickening of the wing margin beyond end of costa. *Rs* obliterated.

In addition to the British species, I have examined typical examples of this genus from North America, West and South Africa and Samoa. None of the species shows any striking morphological distinctions from the genotype; I see no grounds for the recognition of subgenera and regard the names *Microcerata* Felt, *Pseudanarete* Kieffer, *Limnopneuma* Enderlein and *Limnopneumella* Enderlein as strict synonyms of *Anarete*.

The habit of the males of flying in swarms in the sun seems to be common to many species of this genus though very unusual in CECIDOMYIIDAE; it has not been observed in *Lestremia*.

A. candidata Hal.

L. albipennis Mg. ?.

The largest species of the genus in Britain (wing-length 2–3 mm.), and distinguished from all the others by the longer legs of the male, the hind basitarsus being 0·65 of the length of the tibia. Antennae 8-segmented in ♂ (fig. 2, n), the last five segments oval, 10-segmented in ♀. Palpi (fig. 2, n) 4-segmented, first not enlarged, fourth not longer than third. Empodium twice as long as claws in ♂, equalling claws in ♀. Wings (fig. 2, a) milk-white, including all veins, hairs at tip few and small, some present on distal half of *M*1 and tip of *M*2 but none on *Cu*1 or *Cu*2; hind margin of wing rounded; *Cu*1 not extending back as far as *rm*.

I have examined series of specimens of both sexes taken by Malloch at Bonhill, Dumbarton, and by myself at Waxham, Norfolk, in August; those from the latter locality were taken on the sand-dunes flying in a swarm in the sun.

A. lacteipennis Kieff.

A. crassipalpis Kieff., *A. albipennis* Lw. ?.

Superficially resembles *A. candidata* owing to its milk-white wings, but smaller and with shorter legs; differs from all the other British species in possessing a dense group of short, flattened, sensory bristles on the underside of the first segment of the palpi, this segment being somewhat swollen in ♂ (fig. 2, o) and considerably so in ♀. Antennae in ♂ 9-segmented (fig. 2, o) distal segments rather elongate-oval. Palpi with fourth segment somewhat longer than third. Hind basitarsus in ♂ 0·51 of tibial length. Empodium of ♂ much longer, of ♀ only about half as long as claws. Wings (fig. 2, b) milk-white but with the anterior veins darkened; macrotrichia at tip more numerous and obvious than in *candidata*, present on more than half of *M*1, distal half of *M*2 and on tips of *Cu*1 and *Cu*2; hind margin straighter than in *candidata*; length 1·7 mm.

CAMBS., BEDS. Mr. J. E. Collin informs me that the series of males taken at Newmarket on 30.viii.1909 were found flying in a swarm in the sun.

A. heracleana sp. n.

Evidently related to *A. lacteipennis*, but differs from that and all the other British species in the longer vein *Cu*1, which is distinctly traceable further back than *rm*. Antennae in ♂ (fig. 2, p) rather more slender than in *candidata* or *lacteipennis*, 8-segmented,

but last segment somewhat constricted in middle (it has the same form in all three specimens mounted, but may perhaps be divided in some specimens); in ♀ 10-segmented as usual. Palpi (fig. 2, p, in ♂; ♀ not mounted) slender and rather longer than in the other species, fourth segment markedly longer than third. Thorax blackish and somewhat shining (rather less so than in *candidata*); dorso-central hairs short, whitish, almost uniserial. Hypopygium of ♂ (fig. 2, k) almost as in *lacteipennis*; tegmen rather longer and narrower than in *candidata* (fig. 2, h, i). Legs light brownish; hind basitarsus of ♂ as in *lacteipennis*, about 0·52 of length of tibia. Empodium as in *lacteipennis*. Wings (fig. 2, c) whitish but not so strongly milky as in *lacteipennis*; anterior veins darkened; shape and trichiation as in *lacteipennis*, venation differing as noted above. Halteres with dark knob as usual. Wing-length about 1·7–2 mm.

Herts.: Baldock, 8.vii.1933, a series of 15 ♂♂ and 1 ♀ taken feeding on umbels of *Heracleum* and dancing in a swarm in the sun above the flowers.

A. coracina (Zett.) Edw.

A. pilipennis Strobl ?.

Differs from the last three species in having the wings (fig. 2, d) greyish, without milky tinge, and with more numerous macrotrichia at the tip and on the veins, *Cu*1 being setose almost throughout and *Cu*2 as far as the bend; also in having the palpi (fig. 2, q) shorter and only 3-segmented in both sexes, and the antennal segments (fig. 2, q) more rounded. Wings somewhat narrower than in *lacteipennis* and *heracleana*, with rather smaller anal area; length about 1·7 mm.

Of this species I have still only seen the specimens recorded from Bridgwater, Somerset. Confirmation of the identity of these with Zetterstedt's type is needed; the species can hardly be the same as the one figured by Enderlein as *coracina*, because his figure of the wing shows *Cu*2 quite bare.

A. angustata Edw.

Differs from the four species described above in its smaller size, dull instead of shining blackish thorax, and much less developed, obtuse anal area of the wing; also in the size of the empodium, which in the ♂ is somewhat shorter than the claws and in the ♀ shorter still. Antennae of ♂ (fig. 2, n) 9-segmented, flagellar segments rounded, of ♀ 10-segmented as usual. Palpi in all ♂♂ examined (fig. 2, r) 4-segmented, first segment not swollen, fourth nearly twice as long as third. Hypopygium of ♂ (fig. 2, m) with the coxites relatively shorter than in the other species, but structure otherwise similar. Hind basitarsus in ♂ barely half as long as tibia (0·49). Wings (fig. 2, e) greyish, whitish at extreme base only; length about 1·3 mm. *M*1 and *M*2 setose almost throughout, *Cu*1 setose almost as far as base of median fork.

About a dozen specimens taken on windows at Letchworth in summer, 1917–37.

In my original description I indicated a remarkable difference in the structure of the palpi between the two sexes, my statements being based on the examination of two similar females, one of which was taken on the same window at about the same time as the type male. However, on 27th August, 1931, I took another female (also on the same window) in which the palpi have quite the same structure as in the male except that the first segment is a little stouter; this female also agrees with the males in the trichiation of the wing and in having segments 6–8 of the antennae rounded and about as long as broad. I therefore now believe that this third specimen is the true female of *A. angustata* and that the other two belong to a different, allied species, described below.

A. triarthra sp. n.

A small species resembling *A. angustata* in having the thorax dull blackish and wings with very obtuse anal area, but differs in the female sex as follows :—

Palpi (fig. 2, s) only three-segmented, first segment much swollen (but with only a small patch of flattened sensory hairs on the inner side, as in *angustata*), second only half as long as first and hardly longer than broad, third a little under three times as long as broad. Antennae (fig. 2, s) with segments 6–8 rather distinctly broader than long; the numerous short pale sensory hairs on distal parts of flagellar segments (such as are present in both sexes of all species of *Anarete*) rather stouter and less pointed. Wings (fig. 2, f) with *R*1 somewhat longer, extending distinctly beyond level of middle of stem of median fork; macrotrichia on veins less numerous, *M*2 more or less completely bare on basal half, *Cu*1 with only a few macrotrichia at tip. *M*2 seems to be rather thinner than *M*1, especially in the type (in *angustata* both branches of *M* are equally strong). Wing-length about 1·5 mm.

HERTS.: Letchworth, v.1918, type ♀ (formerly allotype of *angustata*), vi.1917, paratype ♀.

A male *Anarete* from Strobl's collection has palpi similar in form to those of *A. triarthra*, but the thorax is reddish-brown (possibly faded), *M*1 ends just at instead of above the tip of the wing, *Cu*1 extends considerably further towards base of wing (as in *A. heracleana*) and the anal area is less obtuse; it is just possible that this is a male of *A. triarthra* though it is more probably a distinct species. The specimen is labelled * " . . n. sp. nach Kieffer's Brief declinata m." Kieffer described a *Lestremia declinata* from Strobl's collection in which *M*1 ends in the wing-tip, but as he could hardly have mistaken an *Anarete* for a *Lestremia* the specimen is presumably wrongly labelled; it might possibly be *A. rubra* Kieff.

Gongromastix End.

This genus was based on *G. andorrana* End., of which a single somewhat damaged male from the Pyrenees was known to the describer. A male in good condition from Strobl's collection, labelled *Lestremia angustipennis* Strobl, which I have examined, agrees so well with Enderlein's figure and brief description that there can be no doubt that the two belong to the same genus. The following generic diagnosis is drawn up from Strobl's specimen :—

Head much as in *Lestremia*: only two small ocelli present; eye-bridges 3–4 facets wide; antennae 16-segmented, all flagellar segments except the last with long necks; palpi (fig. 3, d) long, last segment much the longest. The flagellar segments (fig. 3, c) differ from those of *Lestremia* in having only two complete hair-whorls, a short one near base and a longer one of outstanding hairs near middle; sensory hairs confined to a few short simple hairs on basal segments. Thorax with short dorso-central hairs, acrostichal area bare. Legs much as in *Lestremia*: empodium of moderate size and claws simple. Wings differing from those of *Lestremia* in having the microtrichia coarser but the macrotrichia fine and sparse, almost confined to distal third of wing; costa ending rather less abruptly at tip of *R*5 and reaching a point well beyond level of tip of *Cu*1 instead of ending before this level as in *Lestremia*; *R*1 relatively much longer than in *Lestremia* or *Anarete* (though it is thinned at the tip as in those genera); *M*2 almost as strong as *M*1 and distinct throughout. Hypopygium (fig. 3, a) of very different type from that of

* This and other labels on specimens from Strobl's collection are partly in shorthand, for deciphering which I am indebted to Dr. F. Van Emden.

Lestremia or *Anarete* and resembling that of *Catocha* and *Campylomyza* in having the anal segment rudimentary and hidden under the ninth tergite, the coxites separated only by a small median emargination, and the style short and thick.

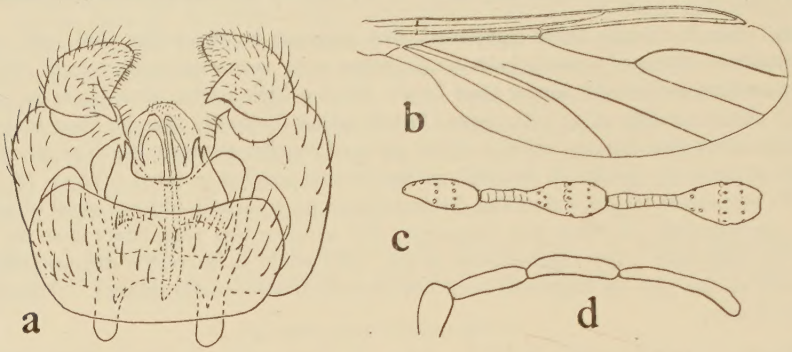

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FIG. 3.—*Gongromastix angustipennis* (Strobl) ♂. a, hypopygium from above; b, wing; c, tip of antenna; d, palp.

G. angustipennis has the mesonotum uniformly dull dark greyish; dorsocentral hairs short, pale and uniserial; legs and halteres dark. Features of the hypopygium which are probably of specific rather than generic importance are the triangular lobe at the base of the style, the two teeth on each side of the tegmen, and the peculiar structure at the tip of the genital rod. The macrotrichia on the lower half of the wing are much scantier than in Enderlein's figure of *G. andorrana*, there being only two or three in the anal area.

EUROPEAN SAWFLIES OF THE GENUS *XYELA* DALMAN (SENS. LAT.) (HYMENOPTERA SYMPHYTA)

By ROBERT B. BENSON, M.A., F.R.E.S.

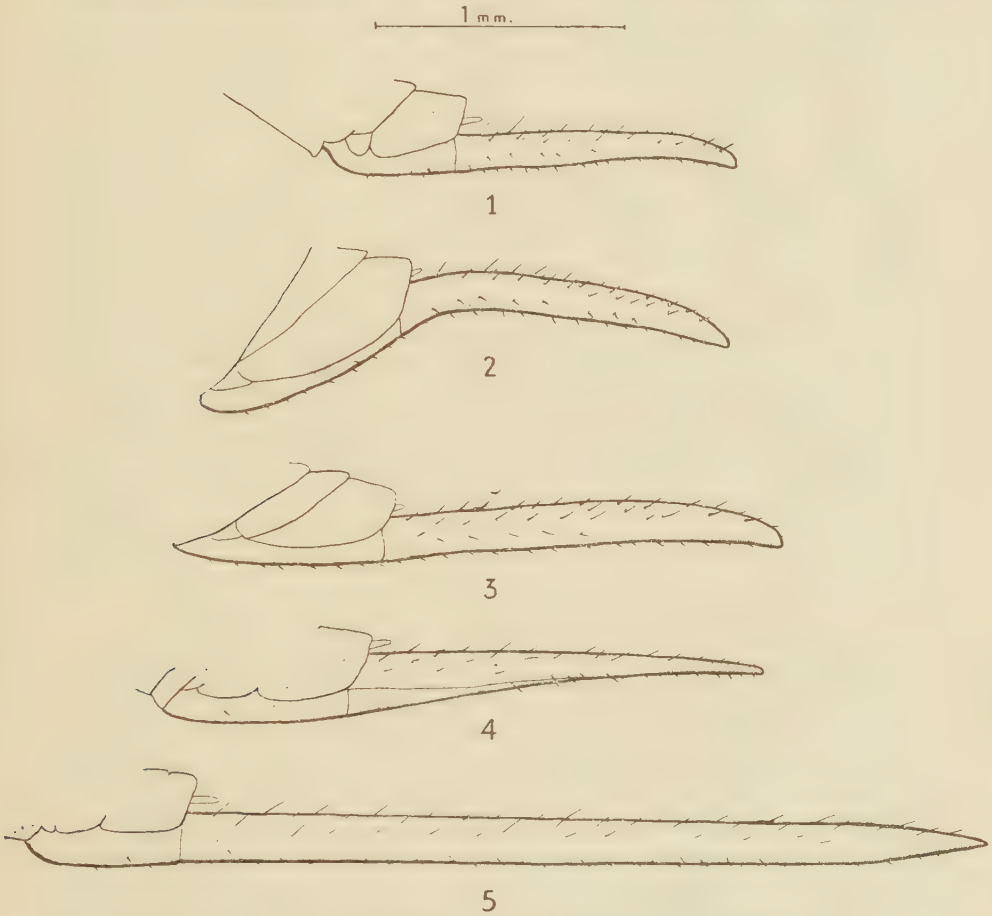
(*Department of Entomology, British Museum* (*Natural History*).)

ENSLIN (1917), following Konow (1897), recognised only two European species of *Xyela* in his monograph: *X. longula* Dalman and *X. julii* Bréb., though he expressed some doubt as to whether *X. graeca* J. P. E. F. Stein and *X. alpigena* Strobl were really synonymous with *X. julii* Bréb. Gussakovsky (1935), in his key to the palaearctic species, followed Enslin in recognising only two European species.

While collecting in Switzerland in June, 1935, I caught 3 females of a species of *Xyela* related to *X. julii* Bréb. but clearly distinct from that species. They were swept from *Pinus Cembra* L. at Arolla, at about 6500 feet in Valais; these were later found to agree with the description of *X. alpigena* Strobl, 1895, a species described from a single pair collected from *Pinus Cembra* L. in the Styrian Alps but not found again since then. Konow quotes the reference for this species as volume 15, 1896, instead of 14, 1895, and as all others have likewise misquoted this reference, it would appear that they never consulted the original full description; if they had done so, it could hardly have been interpreted as referring to *X. julii* Bréb.! Unfortunately I have not been

able to examine Strobl's types, but I have little doubt that my Swiss specimens belong to Strobl's species. In Gussakovsky's key they run to *X. kamstchatica* Gussakovsky, 1935, with which *X. alpigena* Strobl is apparently closely related.

More recently I received one of a number of specimens of another *Xyela* species from Algiers; this was sent for determination by Dr. L. Berland of the Museum national d'Histoire naturelle, Paris, and through his kindness retained for the British Museum collection. Dr. Berland (1937) has already published a note on these specimens as "*Xyela julii*"; they were collected from the local *Pinus nigra mauretanica* at Tikdja, 1500 m. in the Djurjura, in February, 1937.



Female saw-sheath from the side in: Figs. 1, *Xyela graeca* J. P. E. F. Stein; 2, *X. curva* sp. n.; 3, *X. julii* (Brébisson); 4, *X. alpigena* (Strobl); 5, *Xyelatana piliserra* (C. G. Thomson).

The species, however, agrees with the short description of *X. graeca* J. P. E. F. Stein (1876). Again I have not been able actually to see the type of this species, which should be in the J. P. E. F. Stein collection at the Zoologisches Museum der Universität, Berlin, but cannot now be traced, as it was never received there with the rest of the collection; for this information I am indebted to Dr. H. Bischoff. Further specimens of this same species collected in Austria and Smyrna, and yet another apparently new species from Austria, have

more recently very kindly been sent to me for examination by Dr. F. Maidl of the Naturhistorisches Museum at Vienna. Probably still other undiscovered species exist in Europe.

For the palaearctic group of species related to *X. longula* Dalman, 1819, it is proposed to erect a new genus. Not having seen any specimens of this group, I wrote to Dr. R. Malaise of the Naturhistoriska Riksmuseum, Stockholm, and he very kindly lent me a pair from Lapland for examination, presenting the female to the British Museum.

Later, single specimens of *X. longula* Dalman were received for examination with other material kindly lent by Dr. Horn of the Deutsches Entomologisches Institut and by Dr. Maidl; these central European specimens have a longer and less pubescent saw-sheath than the Lapland specimen and tend to confirm Thomson's view that two species are indicated. I am indebted to Dr. Kemner at Lund for examining the type of *X. piliserra* C. G. Thomson, 1871, for me.

The larvae of none of the European species of either *Xyela* or *Pleroneura* is yet known. They have often been associated with *Pinus*, as the adults are frequently found on or near these trees but they are also frequently found on the catkins of other trees such as *Betula*. Dyar (1898) has, however, given a brief account of the biology of the North American *X. minor* Dyar, a species closely related to our *X. julii* Brébisson: the larva feeds on pollen in the staminate flowers of pine; it leaves the flowers before they open and drops to the ground, where it forms a deep earthen cell. The larvae of American species of the closely related genera *Megaxyela* and *Macroxyela* feed on the leaves of various trees such as *Carya*, *Juglans* and *Ulmus*; a detailed account of their morphology together with that of *X. minor* Dyar is given in Yuasa (1922).

I use below the length of the female "saw" as a character rather than of the "saw-sheath," because this latter term is ambiguous: sometimes it is used to mean the gonapophyses of the 9th sternite + the oblong plate at the base, both of which ensheath the saw, and at other times to exclude the oblong plate. The length of the saw-blade is, however, approximately the same as the gonapophyses + the oblong plate.

Comparison between Xyela *Dalman and* Xyelatana *gen. n.*

For the group of species related to *Xyela longula* Dalman I propose that a new genus be erected differing from *Xyela* as follows.

A. Maxillary palp much enlarged with the three basal segments thicker than segment 3 of the antenna, and segment 3 of the palp clearly longer than the basal segment (scape) of the antenna; ♀ saw at most $1\frac{1}{3}$ times as long as the antenna and much shorter than the whole of the rest of the insect; ♀ saw-sheath (figs. 1–4).

Holarctic. Type: *Pinicola julii* Brébisson, 1818. *Xyela* Dalman, 1819.

B. Basal three segments of maxillary palp less swollen and thinner than segment 3 of antenna, and segment 3 of the palp shorter than the scape of the antenna; ♀ saw about $1\frac{3}{4}$ times as long as the antenna and longer than the whole of the rest of the insect; ♀ saw-sheath (fig. 5).

European. Type: *Xyela longula* Dalman. . . . . **Xyelatana** gen. n.

The two species of *Xyelatana* gen. n. may be separated in the female thus:

Saw longer than fore-wing (9·5 : 9). Sweden and central Europe.
longula Dalman, 1819.

Saw shorter than fore-wing (8·7 : 9). Lapland.
piliserra C. G. Thomson, 1871.

Xyela Dalman.

Key to European species ♀♀.

In the females these species are readily separable by the form of the saw-sheath and the length of the antennae. Unfortunately the males cannot be so easily distinguished at present: the differences in the distances apart of the ocelli are less obvious, and it has not been possible to detect any appreciable differences in the genitalia of specimens thought to represent the males of *X. julii* Brébisson, *X. graeca* J. P. E. F. Stein or *X. curva* sp. n. These males, as distinct from their respective females, have the nine apical antennal segments together longer than the three basal ones. In the females this is only so in *X. alpigena* Strobl, of which I have not yet seen a male.

1. POL about $\frac{1}{2}$ OOL; distance between the hind ocelli much less than the distance of one of them from the hind margin of the head (4 : 6–7); hind femora pale; ♀ saw shorter than the antenna . . . . . 2.
— POL at least $\frac{3}{4}$ OOL; distance between the hind ocelli about the same or slightly greater than the distance of one of them from the hind margin of the head; hind femora mostly dark brown; ♀ saw longer than antenna.
(The nine apical antennal segments slightly shorter than the three basal ones; ♀ saw-sheath slightly tapering towards the apex and down-turned at the extreme tip (fig. 3). There is much variation in this species in the development posteriorly of the antennal furrows, which stretch back from the antennae to encircle the front ocellus. In specimens collected by myself at the same time, some have these furrows very sharply defined, some have them but doubtfully present and others entirely absent behind. Length 2·5 to 3·5 mm. (without saw-sheath).
North and central Europe, Russia, Ural and west Siberia.)
♂♀ *julii* Brébisson, 1818.
2. Nine apical segments of the antenna together longer than the three basal. ♀ saw-sheath not curved down at the apex, but tapering apically, so that at about $\frac{1}{4}$ from the apex it is no broader in profile than when viewed from above (fig. 4).
(Basal nerve of fore-wing almost interstitial with 1st transverse cubital nerve. Length 3·5 mm. (without saw-sheath).
Alps of central Europe (Switzerland and Austria).) ♀ *alpigena* Strobl, 1896.
— Nine apical segments of the antenna together shorter than the three basal; ♀ saw-sheath curved down at apex and only slightly tapering apically, so that at about $\frac{1}{4}$ from the apex it is much broader in profile than when viewed from above (figs. 1 and 2) . . . . . 3.
3. Saw-sheath almost straight except at the apex (fig. 1); basal nerve received on cubital of fore-wing about half way between the 1st transverse cubital and the costa. Length 2·5 to 2·75 mm. (without saw-sheath).
Mediterranean (Algiers, Greece, Austria and Smyrna).
♂♀ *graeca* J. P. E. F. Stein, 1876.
— Saw-sheath bent downwards strongly in the middle (fig. 2); basal nerve received on cubital of fore-wing at a point much nearer to the 1st transverse cubital than to the costa. Length 3·5 mm. (without saw-sheath).
Austria . . . . . ♂♀ *curva* sp. n.

Xyela curva sp. n.

♀ *Colour* brown, becoming yellowish-white on the face, the inner orbits above, the pleura, coxae, femora and apical segments of abdomen below; with the following parts more or less black: antennae, groove behind clypeus, antennal and frontal furrows; ocellar and postocellar regions, a stripe between the ocelli and the eye, vertical furrows behind, the hind surface of the head, the mesonotum except for a mark on the hind part of each front lobe, the inner part of side lobe and the middle of the scutellum, the lower edge of the mesopleura, the middle of the mesosternum, the metapleura and saw-sheath. *Wings* slightly yellow; stigma and venation pale yellowish-brown. *Length* 3·5 mm. (without saw-sheath); fore-wing 4·6 mm. *Head* with POL about ½ OOL; distance between hind ocelli less than the distance of one of them from the hind margin of the head; nine apical segments of antenna together slightly shorter than the three basal. *Wings* with basal nerve of fore-wing received on cubital at a point much nearer the 1st transverse cubital than the costa. Saw shorter than antenna; saw-sheath strongly bent downwards in the middle as in fig. 2, with the extreme apex tapering and down-curved.

♂ As in female except for apical segments of abdomen and the fact that the nine apical antennal segments are slightly longer than the three basal ones.

Austria: Wiessenbach, River Triesting 1 ♀, v.1883 (Holotype) (Kolazy Coll.); Mauer, 4 ♂♂ (including Allotype) 15.iv.1869, 1 ♀ "auf *Betula* Stämmen" 15.v.1869 and 1 ♀ without date (Mann Coll.); River Triesting 3 ♀♀, 1867 and 1 ♀, 1868 (Tschek Coll.); 1 ♀ (Kolazy Coll.); 4 ♀♀ (Ullrich Coll.); 2 ♀♀ (Simony Coll.); 1 ♂, 1 ♀, no data.

All these are labelled "*julii* det. Konow" and, except for 1 ♂ and 4 ♀♀ kindly presented to the British Museum, are all in the Naturhistorisches Museum, Vienna.

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BEITRÄGE ZUR KENNTNIS DER *BEMBIDION*-ARTEN DES FERNEN OSTENS (JAPAN, KOREA, OSTSIBIRIEN) (COLEOPTERA)

1. Mitteilung.

Von Dr. Fritz Netolitzky.

Communicated by H. E. Andrewes, F.R.E.S.

Bembidion (*Plataphus*) *lucillum* Bates.

Beschrieben von Hakone. Ich sah drei übereinstimmende Stücke von diesem Fundorte in der Sammlung des British Museum in London. Diese gehören wegen der einfachen Beborstung der Abdominalsternite und wegen des nicht eingedrückt gerandeten Fortsatzes zwischen den Mittelhüften zur Gruppe des *B. prasinum*, mit dem auch die bis zur Spitze der Flügeldecken reichenden tiefen und fast unpunktierten Furchen übereinstimmen. (vergl. *Wien. ent. Ztg* **1913** : 144). *B. lucillum* gleicht in Bezug auf die Streifung der Flügeldecken und der Färbung auch dem *B. oxyglymma* Bates, das aber wegen der Beborstung der Abdominalsternite in das Subg. *Trichoplataphus* Net. gehört; ausserdem fehlt diesem in den Hinterwinkeln des Halsschildes ein Fultchen und statt dessen ist hier ein erhabenes Feld zu sehen. Neue Fundorte des *B. lucillum* : Tokio, Mitake (*Y. Yano*), Shikoku, Mt. Ishizuchi (*Y. Yano*).

Wie mir Herr Andrewes mitteilte und durch Zusendung von Belegen zeigte, stecken in der Sammlung von London unter dem Namen *B. lucillum* Bates noch einige Tiere, aber von anderen Fundorten, die sich vom wahren *B. lucillum* durch deutlichere Punkte in den Streifen der Flügeldecken auszeichnen. Es ist möglich, dass Bates selbst Schuld an der Verwirrung ist, aber wir sind Mangels einer Holotype berechtigt die Wahl dahin zu treffen, dass wir nur die Tiere von Hakone (" Lokotypen ") als das richtige *B. lucillum* nehmen und zu *Plataphus* stellen, während das andere Tier zum subg. *Peryphus* gehört und neu zu benennen ist.

Bembidion (Peryphus) pseudolucillum sp. n.

Der Brustfortsatz zwischen den Mittelhüften ist vor der Spitze eingedrückt und daher gerandet; alle äusserlich sichtbaren Merkmale sprechen für die Einordnung in das Subg. *Peryphus* und zwar in die Gruppe des *B. nitidulum* Marsh. in weitem Sinne.

Kopf mit mittelgrossen gewölbten Augen und gut abgesetzten Schläfen; Stirnfalten neben den Augen parallel, die sie begrenzenden Innenfurchen tief, der Grund ist polygonal-retikuliert und nur die erhabene Medianlinie zwischen den Augen ist mikroskopisch glatt. *Halsschild* sehr wenig breiter als lang, die Seiten vor den kurz-rechtwinkeligen Hinterecken zugeschweift, der abgesetzte Seitenrand (Randkehle) bis zu den Vorderecken deutlich. Das Fältchen in den Hinterecken ist nicht sehr gut sichtbar, verschwindet auch vor der Spitze der Ecken oder ist so gut wie undeutlich. Halsschildbasis ohne deutliche Punktierung, aber rauh gekörnelt, die ganze Oberfläche ist mikroskopisch enggenetzt. *Flügeldecken* mit deutlichen Schultern, ihre Streifung und Punktierung erinnern an jene des *B. tibiale* und *B. atrocoeruleum*, doch ist der siebente Streifen deutlich vorhanden. An der Spitze der Decken verbindet sich der erste Streif mit dem zweiten, und der kürzere dritte

mit dem vierten; der fünfte Streifen biegt vor der Spitze nach innen vertieft um und nähert sich dem Ende des verbundenen ersten und zweiten Streifens; der sechste und der siebente Streifen sind die kürzesten. Die Mikroskulptur der Decken besteht aus ungemein engen Querlinien, die sich nicht mehr als Maschen differenzieren lassen.

Färbung: Oberseite dunkel-schwarzblau, Tibien, Tarsen und das erste Fühlerglied pechbraun. *Länge:* 3·5–4·0 mm.

Type und Cotypen (Brit. Mus.) von Settsu, Katsuoji (16.vi.1924., *J. E. A. Lewis*). Ferner von: Chuzenji (*Lewis*); Kashiwagi (*Lewis*); Oudaigahara, Yamato (*Y. Yano*). Ein Exemplar von Chuzenji hat gröbere Punkte in den Flügeldeckenstreifen, dürfte aber doch zu *B. pseudolucillum* gehören.

Die nächstverwandte Art aus dem fernen Osten ist *B. amurense* Motsch., von dem ich typische Exemplare in der Sammlung Moskau zum Vergleiche heranziehen konnte. Es unterscheidet sich von *B. pseudolucillum* durch den stärker herzförmigen Halsschild, der an der Basis deutlich punktiert und auf der Scheibe frei von einer Mikroskulptur ist; dasselbe gilt von dem zwischen den Augen ganz glatten Kopf; ausserdem ist die Basis der Fühler ausgedehnt hell, während bei *B. pseudolucillum* nur das erste Glied bräunlich ist. In Japan kommt eine Rasse des *B. amurense* mit glattem Kopf und Halsschild auch vor, doch fehlt es an Material, um eine genauere Charakteristik geben zu können.

Bembidion (Plataphus) infuscatipenne sp. n.

Ein dem *B. lucillum* Bates ähnliches Tier fand ich in der Coll. Motschulsky in Moskau unter der obigen Benennung von " Sib. orient. Dauria mer." (vergl. *Ges. Luxembg. Naturfr.* **1935** : 23). Die Artbeschreibung hat Motschulsky nicht veröffentlicht, sodass es hiemit geschehen soll, weil für eine künftige Bearbeitung der japanischen Fauna auch die Tiere des asiatischen Festlandes in Betracht gezogen werden müssen.

B. infuscatipenne gehört nach der Gestalt des Fortsatzes der Brust zwischen den Mittelhüften, wegen der einfachen Beborstung der Ventralsternite und der Bildung von Kopf, Halsschild und der Streifung der Flügeldecken zum Subgenus *Plataphus*.

Zum Unterschiede von dem schwarzblauen *B. lucillum* Bates sind die Fühler (besonders das Basalglied), die Palpen und Tibien hell pechbraun, ebenso die ganzen Flügeldecken, obwohl die Tiere durchwegs reif sind. Die Mikroskulptur des dunklen Kopfes und Halsschildes besteht aus Polygonen, die der Elytren aus sehr engen Maschen. Die Elytren sind etwas gewölbter und ovaler gestaltet, die Punktulierung in den bis hinten deutlichen Streifen ist sehr klein und am ähnlichsten jenen bei *B. prasinum*, das aber bedeutend grösser ist und eine Mikroskulptur aus Polygonen auf den Elytren besitzt. Grösse 4 mm.

Type: Wladiwostok, Sib. (*Frieb*, 10.vii.1919) (Coll. Netolitzky); Cotypen ebenso und von Wladiwostok, Usuri mer. (leg. *Dr. Jureček*, ein Ex.); Chitaizki-Sterena, Sib. or. (leg. *B. v. Bodemeyer*, ein Ex.).

Bembidion (Plataphus) persuasum sp. n.

Alle Merkmale, die man am Chitinskelett ablesen kann, stimmen mit denen des Subg. *Plataphus* überein. Das Tier ist ausgezeichnet durch die ganz dunklen Anhangsorgane (Fühler, Palpen und Beine), sodass zum Unterschiede besonders die Verwandten des *B. gebleri* Gebl. in Betracht kommen. Von dieser Art unterscheidet sich *B. persuasum* weniger habituell, als vielmehr durch die sehr feinen, dennoch die Flügeldeckenspitze deutlich und in der gewohnten

Weise erreichenden Streifen; in diesen erkennt man winzige nadelstichartige Pünktchen.

Kopf und Halsschild mikroskopisch vollständig genetzt, die Maschen rechteckig oder polygonal; die Mikroskulptur der Flügeldecken dagegen besteht aus sehr feinen und enggestellten Querlinien, ohne dass eine Maschenbildung zu erkennen wäre, wie dies bei derselben Vergrösserung bei *B. gebleri* (und anscheinend auch bei dem mir nicht sicher bekannten *B. birulai* Popp.) der Fall ist.

Grösse: 4·5–5·0 mm.

Type: Wladiwostok (16.v.1920, *H. Frieb*) (Coll. Netolitzky); Cotypen ebenso (9.vi. u. 9.vii.1919); Ferner: Wladiwostok (*Dr. Jureček*); Nikolsk Usurijsk (*Mandl*); Chitaizki-Sterena, Sib. or. (*B. v. Bodemeyer*); Setschan (Coll. Staudinger); Chingau (unreif) nur je ein Exemplar, die alle etwas grösser sind, als die Tiere von H. Frieb, aber sich im übrigen von der Type nicht trennen lassen. Wir brauchen auch dieses Tier zur Klärung der Fauna im fernen Osten, wenn wir über das Festland hinaus nach Japan, Sachalin und die Kurilen blicken wollen.

Book Notices.

Nederlandsch-Indische Culicinen. By J. Bonne-Wepster and S. L. Brug. Batavia, G. Kolff & Co. (Geneesk. Tijdschrift v. Nederl. Indië **77** (9–10). 1937.) Pp. 105, 45 figs.

This book gives a systematic account of the Culicinae of the Dutch East Indies. After the introductory matter a key to the species dealt with and description of the genera and species is given. A chapter is devoted to each of the following subjects: Technique of collecting mosquitoes; examination of *Filaria*-carriers; key to genera and to species of *Filaria*-carriers. The book is illustrated with excellent figures and is completed by an index.

A New Subspecies of Plebejus argus (L.). By J. Antony Thompson. Pp. 6. [n.pl.] [n.d.] Price 9*d.*

This booklet gives the description of a new subspecies of *P. argus* from Caernarvonshire and, in addition, four varieties of the same insect.

A NEW SPECIES OF *ECHTHROMORPHA* FROM SAMOA

By R. A. Cushman

(*Bureau of Entomology and Plant Quarantine, U.S. Department of Agriculture.*)

Communicated by Mr. E. P. Mumford, F.R.E.S.

The new species of *Echthromorpha* described below was submitted to me by David T. Fullaway of the Territorial Board of Agriculture and Forestry in Hawaii.

Echthromorpha samoana sp. n.

Similar in form and structure and in the arrangement of the pale markings to *notulatoria* (Fab.), but differs in the red ground colour and in the polished and sparsely punctate abdomen, shorter malar space, absence of the infumate spot at apex of wing, as well as in many minor details.

♀.—Length 15 mm.; antenna 14 mm.

Head polished, face sparsely punctate at sides above, barely broader at level of clypeal foveae than long; malar space only slightly longer than basal width of mandible; junction of occipital and hypostomal carinae about twice the length of malar space from lower articulation of mandible. *Thorax* sparsely punctate dorsally and ventrally, mostly polished laterally; pronotum foveolate along posterior lateral margin; notauli not indicated; scutellum convexly elevated; propodeum polished medially and posteriorly, punctate elsewhere, without trace of apophyses; venation and legs as in *notulatoria* (Fab.). *Abdomen* polished and sparsely punctate; first tergite hardly a half longer than broad; ovipositor depressed throughout, sheath nearly as long as tergites 1–4 combined.

Light mahogany red, darker on head and thorax, especially in frontal scrobes, middle of postvertex, and a median stripe on mesoscutum; yellow as follows: face, clypeus, mouth-parts, entire orbits, malar space, temples, two stripes on mesoscutum (broader anteriorly and extending backward along margins), scutellum, postscutellum, subalar tubercle, prepectus, a large semicircular spot below tubercle and a smaller spot before middle coxa (these two connected by an oblique line), metapleurum posteriorly, propodeum on each side of middle posteriorly, front and middle coxae and trochanters, hind coxa dorsally, and apical margins of tergites 1–6 (interrupted medially on 5–6); apex of abdomen paler red; antennae fuscous, scape and pedicel reddish yellow; wings yellowish hyaline, without infumate spot; ovipositor sheath black.

♂.—Malar space shorter; dark colour of head more extensive; thorax less contrastingly coloured, the red pale and the yellow markings more diffused and more extensive; abdomen paler with at most tergites 1–3 yellow-margined, sometimes uniformly pale testaceous.

Type-locality.—Samoa: Tutuila.

Type, allotype and paratypes.—No. 52113, U.S. National Museum.

Two ♀♀ (including the type) and 2 ♂♂ (including the allotype) collected ii.–iii., 1930, by *D. T. Fullaway* and one ♂, H.F.W. No. 13, taken by *H. F. Willard* at an elevation of 1000 ft. on Tutuila.